

REMARKS

Claims 1-5 are pending and stand ready for further action on the merits.

Support for the amendment to claim 1 can be found on page 62, lines 20-22 of the specification. Applicants respectfully submit that a proper interpretation of the phrase "a combination of phthalazine and phthalic acid" as appearing in the last line of claim 1, would be that this phrase encompasses phthalazine and phthalic acid and/or the phthalazine and phthalic acid derivatives described on page 62, lines 12-19 of the specification.

Support for new claim 5 can be found on the first and second paragraphs of page 7.

No new matter has been added by way of the above-amendment.

Advantages of the Present Invention

The present invention is drawn to a photothermographic material having excellent heat developing properties as well as image stock stability. The image stock stability prevents the attachment of foreign materials such as dust, etc., which cause white spots on the developed film.

As a result of intensive investigations, the present inventors have surprisingly found that photothermographic materials can show excellent heat-developing properties and image

stock stability when the photothermographic material contains a unique surface active agent of formula (F)



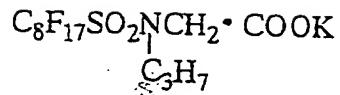
in the presence of color toning agents of phthalazine and phthalic acid. The experiments described in the present specification are evidence of this fact. The following table includes data related to the image stock stability of the inventive photothermographic material, and is obtained from Table 1 on page 105 of the present specification.

Sample No.	Fluorine-based Surface Active Agent	White Spots	Note
1	Comp. A	8	Comparison
001	FC-1	10	Comparison
002	FC-2	9	Comparison
003	FC-3	11	Comparison
004	FS-18	3	Invention
005	FS-19	3	Invention
006	FS-21	2	Invention
007	FS-26	4	Invention
008	FS-38	3	Invention
009	FS-39	3	Invention
010	FS-41	2	Invention

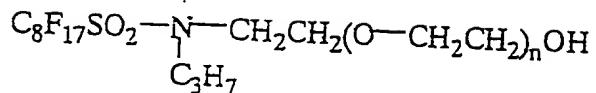
Comp. A = N-perfluoroctylsulfonyl-N-propylalanine potassium salt and polyethylene glycol mono(N-perfluoroctylsulfonyl-N-propyl-2-aminoethyl) ether

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FC-1

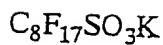


FC-2



n=14.9

FC-3

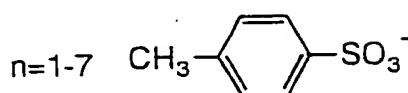


FS-18 [F(CF₂CF₂)_nCH₂CH₂O]_xPO(O⁻M⁺)_y M⁺=H⁺,NH₄⁺,Na⁺,Li⁺
x+y=3,n=1-7

FS-19 [F(CF₂CF₂)_nCH₂CH₂O]_xPO(O⁻M⁺)_y(OCH₂CH₂OH)_z
M⁺=H⁺, NH₄⁺, Na⁺, Li⁺
x+y+z=3, n=1-7

FS-21 $C_6F_{13}CH_2CH_2SO_3^-M^+$ $M^+ = H^+, NH_4^+, Li^+, Na^+, K^+$

FS-26 $F(CF_2CF_2)_nCH_2CH_2SO_2NHCH_2CH_2CH_2N^+(CH_3)_3$



FS-38 F(CF₂CF₂)_nCH₂CH₂O(CH₂CH₂O)_xH n=1-7,x=0-15

FS-39 $F(CF_2CF_2)_nCH_2CH_2O(CH_2CH_2O)_xH$ $n=1-9, x=0-25$

FS-41 $\text{C}_6\text{F}_{13}\text{CH}_2\text{CH}_2\text{SO}_2\underset{\text{C}_3\text{H}_7}{\underset{|}{\text{N}}}\text{CH}_2\text{CH}_2\text{O}(\text{CH}_2\text{CH}_2\text{O})_x\text{H}$ x=0-15

As described on the top of page 97 and on page 100, lines 13-14 and page 101, lines 17-23, the samples in the above table were prepared with both phthalazine compounds and phthalic acid compounds as the color toning agents. As can be seen from the data, there was a marked reduction in the number of white spots in the photothermographic material containing the phthalazine compound/phthalic acid compound color toning agent and the fluorine-based surface active agent of formula (F) when compared to essentially the same photothermographic material except that the fluorine-based surface active agent was structurally distinct from the compounds described in formula (F).

Applicants respectfully submit that none of the cited references teach or fairly suggest the improvements to the image stock stability of the photothermographic material obtained using the combination of a fluorinated surface active agent of formula (F) in combination with a phthalazine/phthalic acid color toning agent, and as such these improvements would not be expected based on the teachings of the cited references.

The above-explanation has been provided to highlight the distinctions between the presently claimed invention and the teachings of the cited references.

Toya, U.S. 5,698,380

Claims 1-2 are rejected under 35 USC 102(b) as being anticipated by Toya. Applicants respectfully traverse the rejection.

Toya teaches a method of forming an image on a light sensitive material which comprises a support having provided thereon at least one layer containing light-sensitive silver halide grains having an average grain size of no greater than 0.2 microns, and the light-sensitive silver halide grains have a coverage rate of no greater than 1 g/m², based on silver. (See Abstract). Based on the disclosure of Toya, the gist of his invention is the size and concentration of the silver halide grains in the light-sensitive material. Toya is not concerned to any significant degree with matters such as a surface active agent and a color toning agent in the photothermographic material.

Applicants respectfully submit that Toya fails to anticipate the presently claimed invention, since Toya fails to place into the possession of the public, a photothermographic material containing a fluorinated surface active agent as defined by inventive formula (F) in combination with a phthalazine compound and a phthalic acid compound, as presently claimed. Toya only

discloses the use of a possible combination of a phthalazine and phthalic acid toning agent in column 7, lines 23-24 amongst a long list of possible toning agents. In addition, in the exemplified photothermographic materials, Toya uses phthalazinone alone, see column 16, line 53.

Since Toya fails to place in the possession of the public a photothermographic material containing both phthalic acid and phthalazine, Applicants respectfully submit that the presently claimed invention is not anticipated by Toya and withdrawal of the rejection is respectfully requested.

Melpolder et al., U.S. 6,287,754

Claims 1-2 are rejected under 35 U.S.C. §102(e) as being anticipated by Melpolder et al., Applicants respectfully traverse the rejection.

Melpolder et al. teach a thermally processable imaging element which is formed with a protective overcoat layer and a backing layer containing a fluoro surfactant "in an amount sufficient to serve as a triboelectric charge control agent and effective in providing essentially the same triboelectric charging characteristics to the backing layer as to the protective overcoat layer." Based on the specification of Melpolder et al., it appears that Melpolder et al. is concerned with the properties engendered by the fluoro surfactant, and is not concerned with the type of toning agent used. In fact, Melpolder et al. do not

prepare in any of examples a photothermographic material containing a toning agent. Melpolder et al. merely suggests the use of phthalazine as a toning agent in column 5, lines 55-65, not the combination of phthalazine and phthalic acid, as presently claimed.

In describing the requirements for rejection of a claim by anticipation, the Manual of Patent Examining Procedure (Section 2131) states:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (ref. omitted). The identical invention must be shown in as complete detail as is contained in the... claim (ref. omitted)."

Accordingly, claims 1-2, as presently amended, are not anticipated by Melpolder et al., since Melpolder et al. fail to teach or suggest that the toning agent includes a combination of phthalazine and phthalic acid. As such, withdrawal of the rejection is respectfully requested.

Moon, U.S. 5,989,796

Claims 1-2 are rejected under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Moon. Applicants respectfully traverse the rejection.

The gist of Moon's invention is to reduce the low density spots visible after thermal processing, by including a protective

coat having a film forming binder comprised of a water dispersible polymer containing hydroxy pendent groups and specific surfactants.

Regarding the toner in the photothermographic material, Moon describe as a laundry list of possible toners in column 12, lines 13-53. In this list, at column 12, lines 37-38, there is no teaching or suggestion that phthalazine can be combined with phthalic acid, as presently claimed. In addition, Moon only uses phthalimide in the examples. See column 19, line 12.

As the MPEP directs, all of the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of anticipation or obviousness. See MPEP §2131 and §2143.03. Applicants respectfully submit that the presently claimed invention is neither anticipated by nor rendered obvious over Moon, since Moon fails to teach or suggest that the toner can include a combination of phthalazine and phthalic acid, as presently claimed. As such, withdrawal of the rejection is respectfully requested.

Toya, Moon, Melpolder et al., Matsumoto et al., U.S. 5,958,668,

Kirk et al., U.S. 5,939,248 and Milton U.S. 3,544,336

Claims 3-4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Toya, Moon and Melpolder et al. in view of Matsumoto et al., Kirk et al. and Milton. Applicants respectfully traverse the rejection.

As mentioned above, Toya, Moon and Melpolder et al. fail to teach or suggest the photothermographic material comprising a surface active agent of inventive formula (F) in combination with a phthalazine/phthalic acid compound toning agent, nor the unexpectedly improved properties engendered by this combination in the inventive photothermographic material. The patentable distinctions between the presently claimed invention and the teachings of Toya, Moon and Melpolder et al., as described above, are herein incorporated by reference.

The Examiner, aware of the deficiencies of Toya, Moon and Melpolder et al., cites Matsumoto et al., Kirk et al. and Milton in order to cure those deficiencies. Applicants respectfully submit that the teachings of the combination of Matsumoto et al., Kirk et al. and Milton fail to cure these deficiencies.

The gist of the invention of Matsumoto et al. is to give a recording material little fog and dynamic color development based upon the presence of an antifoggant of general formula (A)-(F). See column 2, lines 11-39. Matsumoto et al. fail to teach or suggest the combination of phthalazine and phthalic acid, as presently claimed. In column 19, lines 11-36, Matsumoto et al. generically teach types of toning agents which can be used in the recording medium. However none of the toning agents include phthalazine, as presently claimed. Also, Matsumoto et al. use phthalazinone as the toning agent in each of the examples. See column 22, line 60. Thus, Applicants respectfully submit that

Matsumoto et al. fail to cure the deficiencies of Toya, Moon and Melpolder et al.

Regarding Kirk et al., the Examiner cites this reference for teaching the polyhalogenate compound of inventive claim 4 and the phosphorus compound of inventive claim 3. As such, Kirk et al. fail to cure the deficiencies of the combination of Toya, Moon, Melpolder et al. and Matsumoto et al.

With regard to the teachings of Milton, the Examiner cites Milton for teaching a phosphorus compound of inventive claim 3. Since Milton fails to teach or suggest the fluorinated surfactant of inventive formula (F) in combination with a color toning agent of phthalazine and phthalic acid compounds, Applicants respectfully submit that Milton fails to cure the deficiencies of the combination of Toya, Moon, Melpolder et al., Matsumoto et al. and Kirk et al. As such, withdrawal of the rejection is respectfully requested.

Notice of References Cited (PTO-892 Form)

Applicants note that the Examiner has not indicated on the PTO-892 Form enclosed with the outstanding Office Action, the references of Moon and Milton et al. Applicants respectfully request a Supplemental PTO-892 Form which lists these references.

Conclusion

In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. A notice to such effect is earnestly solicited.

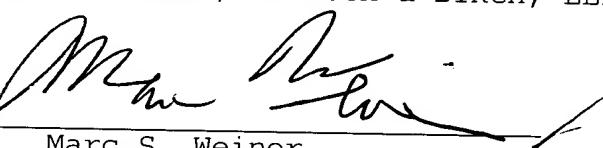
Applicants have attached hereto a marked up version of the claims to show the changes made for the Examiner's convenience.

If the Examiner has any questions concerning this application, he is requested to contact Garth M. Dahlen, Ph.D. (#43,575) at the offices of Birch, Stewart, Kolasch & Birch, LLP.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification has been amended as follows:

The third paragraph beginning on page 1 and ending on page 2 has been amended as follows:

--In a general image-forming material field, there is the same requirement, but in particular, because the images for the medical treatment diagnosis are required to have minute depictions, [the] images having excellent [in the] sharpness and [the] graininess are necessary and [there is a feature that] it is preferred to have images [of] in a blue black tone [are preferred] from the view point of [the easiness of the] ease of diagnosis. At present, various hard copy systems utilizing pigments, dyes, etc., such as an ink jet printer, an [electrophotography] electrophotography, etc., have been mainly used as general image-forming systems but there are no systems, which can be [satisfactory] satisfactorily used as an output system for medical treatment systems.--

The second paragraph beginning on page 3 and ending on page 4 has been amended as follows:

--The [problems in the] present invention serves to solve the problems of the conventional techniques described above. That is, the [problems of the] present invention [to be solved is to

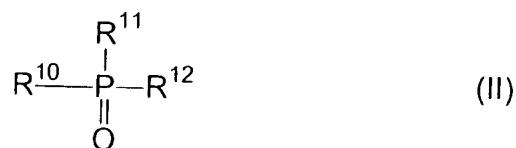
provide] provides a photothermographic material excellent in the heat-developing property and [the] image stock stability, which prevents [attaching] the attachment of foreign matters such as [dusts] dust, etc., causing white spots (a white spot is determined by [observed in the case of visually observing] visual observance using a magnifying [lese] lens on a Shaukasten [a] wherein the sample has a [developed such that the] density [becomes] of 2.0) [hindrance] after heat development.--

The first paragraph on page 4 has been amended as follows:

--As the result of intensively investigating [for solving] the above-described problems, the present inventors have found that by using a surface active agent having [the] a definite structure, the excellent photothermographic material giving the desired effects can be provided and have accomplished the present invention.-

The second paragraph on page 5 has been amended as follows:

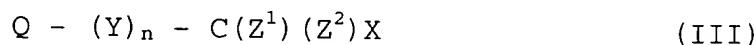
--Also, it is [preferably] preferable that the photothermographic material of the invention further comprises a compound represented by the following formula (II):



wherein R¹⁰, R¹¹, and R¹² each independently represents an alkyl group, an aralkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group, or a heterocyclic group.--

The first paragraph on page 6 has been amended as follows:

--It is [preferably] preferable that the photothermographic material of the invention further comprises a compound represented by the following formula (III):



wherein Q represents an alkyl group, an aryl group, or a heterocyclic group, Y represents a divalent connecting group, n represents 0 or 1, Z¹ and Z² each represents a halogen atom, and X represents a hydrogen atom or an electron attractive group.--

The first paragraph on page 14 and ending on page 15 has been amended as follows:

--The photothermographic material of the invention comprises a light-insensitive organic silver salt. The organic silver [sale] salt, which can be used in the invention, is a silver salt, which is relatively stable to light but forms a silver image in the case of being heated to 80°C or higher [under the existences] in the presence of a light-exposed photocatalyst (a latent image

of a light-sensitive silver halide) and a reducing agent. The organic silver salt may be an optional organic substance containing a source capable of reducing a silver ion. Such light-insensitive organic silver salts are described in paragraph numbers 0048 to 0049 of JP-A-10-62899, EP-A-0803764, page 18, line 24 to page 19, line 37 and EP-A-0962812. The silver salts of organic acids, and particularly the silver salts of long chain aliphatic carboxylic acids (having from 10 to 30, and preferably from 15 to 28 carbon atoms) are preferred. Preferred examples of the organic silver salt include silver behenate, silver arachidinate, silver stearate, silver oleate, silver laurate, silver caproate, silver myristate, silver palmitate, and the mixture of them. In the invention, in these organic silver salts, the use of organic acid silver having a content of silver behenate of at least 75 mol% is preferred.-

The first paragraph on page 97 has been amended as follows:

--In 174.57 kg of water was dissolved 8 kg of modified polyvinyl alcohol MP203, manufactured by KURARAY CO., LTD., and then 3.15 kg of an aqueous solution of 20% by weight sodium triisopropylnaphthalenesulfonate and 14.28 kg of 6-isopropylphthalazine were added to the solution to prepare a solution of 5% by weight [6-isopropylphthalazine] 6-isopropylphthalazine.--

IN THE CLAIMS:

Claim 1 has been amended as follows:

1. (Amended) A photothermographic material comprising a support having provided on one surface thereof at least one kind of light-sensitive silver halide, a light-insensitive organic silver salt, a reducing agent for silver ions, and a binder, wherein the photothermographic material comprises a surface active agent represented by the following formula (F):



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wherein Rf represents a perfluoroalkyl group, Rc represents an alkylene group, Z represents a group having an anionic group, a cationic group, a betaine-series group, or a nonionic polar group necessary for imparting a surface activity, n represents an integer of 0 or 1, and m represents an integer of 1, 2 or 3, and wherein the photothermographic material comprises a color toning agent, which is a combination of phthalazine and phthalic acid.

Claim 5 has been added.